

CLAIMS

1. A lithographic projection apparatus comprising:
a radiation system to supply a projection beam of electromagnetic
5 radiation having a wavelength of 250nm or less;

a support structure adapted to support patterning structure which can be used to pattern
the projection beam according to a desired pattern;

a substrate table to hold a substrate;

a projection system to project the patterned beam onto a target portion of the
10 substrate; and

a gas supply to supply a purge gas to a space in said apparatus, said space containing
an optical component positioned to interact with the projection beam, wherein said purge gas
comprises molecular oxygen at a total partial pressure of from 1×10^{-4} Pa to 1 Pa.

15 2. An apparatus according to claim 1, wherein said purge gas further comprises an inert
gas selected from the group comprising helium, argon, nitrogen and mixtures thereof, and
wherein the total amount of molecular oxygen present in said purge gas is from 1 ppb to 10
ppm by volume.

20 3. An apparatus according to claim 1, wherein said space is substantially evacuated.

4. An apparatus according to claim 1, which apparatus further comprises a further
supply of electromagnetic radiation having a wavelength of 250nm or less and arranged to
supply such radiation onto said optical component.

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5. A device manufacturing method comprising:

projecting a patterned beam of radiation having a wavelength of 250nm or less onto a
target portion of a layer of radiation-sensitive material on a substrate, and

irradiating a space containing an optical component of a lithographic projection
30 apparatus which is positioned to interact with the projection beam with the projection beam
and supplying to said space a purge gas comprising molecular oxygen at a total partial
pressure of from 1×10^{-4} Pa to 1 Pa..

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6. A method according to claim 5, wherein the purge gas further comprises one of an inert gas, preferably helium, argon, nitrogen and mixtures thereof, and wherein the total amount of molecular oxygen present in said purge gas is from 1 ppb to 10 ppm by volume.

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7. A method according to claim 5, wherein said space is substantially evacuated.

8. A method according to claim 5, further comprising:

supplying a further beam of electromagnetic radiation having a wavelength of 250nm

10 or less, and

irradiating said optical component with said further beam of electromagnetic radiation, while projecting said patterned beam of radiation onto said target portion.

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